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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,428	07/27/2001	Charles C. Haluzak	10008368-1	1124

7590 03/14/2005
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EXAMINER	
CREPEAU, JONATHAN	
ART UNIT	PAPER NUMBER
1746	

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917,428

Applicant(s)

HALUZAK, CHARLES C.

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6, 12 and 18-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 12 and 18-23 is/are rejected.
- 7) ☒ Claim(s) 24 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/1/05.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 1-3, 5, 6, 12, and 18-25 after entry of the amendment of February 28, 2005. Upon consideration of the IDS filed on February 1, 2005, a new ground of rejection has been applied herein to claims 1-3, 5, 6, 12, and 18-23. As such, prosecution is reopened and this action is non-final.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 18-21 and 23 are rejected under 35 U.S.C. 102(a) as being anticipated by DE 19914681. In Figures 1 and 2, the reference teaches a silicon substrate (1) that supports a plurality of individual elongate fuel cells. Each fuel cell comprises two electrodes (4, 5) and a proton-conducting electrolyte (6) composed of a fluorinated sulfonic acid polymer (see claim 1 of the machine translation). The silicon substrate appears to contain elongate fuel channels (3) that allow fuel to reach the anodes (5) of the fuel cells. The elongate fuel channels are supplied in a parallel manner by a cavity (10) in a glass substrate (11).

Thus, the instant claims are anticipated.

Claim Rejections - 35 USC § 103

4. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over DE 19914681.

The reference is applied to claims 18-21 and 23 for the reasons stated above. However, the reference does not appear to teach that the thickness of the PEM is in the range of 50-100 microns as recited in claim 22.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be sufficiently skilled to optimize the thickness of the membrane of DE '681. Generally, a thinner membrane will have less internal resistance but also less mechanical strength. It would be within the skill of the art to use an optimum thickness of the membrane of DE '681, e.g., a thickness within the claimed range. It has been held that the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

5. Claims 1-3, 6, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 19914681 in view of Jankowski et al (2003/0138685).

DE '681 does not expressly teach that the apparatus comprises a second silicon substrate bonded to the first substrate and containing second fuel channels, the second substrate having

second fuel cells attached thereto, as recited in claim 1. The reference further does not teach that the apparatuses are stacked within a frame, as also recited in claim 1.

In Figure 8, Jankowski et al. teach a mirrored double substrate/double fuel cell configuration with a central fuel supply channel.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of Jankowski to use the a double substrate/double fuel cell configuration in the apparatus of DE '681. In paragraph [0043], Jankowski teaches that "a symmetrical structure is formed and a single fuel inlet 215 can now deliver fuel to double the effective fuel cell stack area." Thus, the configuration of Jankowski advantageously results in the doubling of fuel cell area. Further, Jankowski suggests stacking the structures in paragraph [0043]. As such, the limitations in claim 1 concerning the stacking of the fuel cells and the spacing by a frame would also be rendered obvious by Jankowski.

Allowable Subject Matter

6. Claims 24 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

Claim 24 recites that the elongate fuel chambers are connected to each other in series.

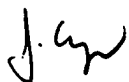
DE 19914681, the closest prior art, does not teach or fairly suggest this limitation.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Primary Examiner
Art Unit 1746
March 10, 2005